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October 20, 1988

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Ms. Donna Searcy
Secretary
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554

Federal Communications Commission
Office of the Secretary

RE: MM Docket No. 87-268: Advanced Television Systems and Their
Impact on the Existing Television Broadcast Service

Dear Ms. Searcy:

Transmitted herewith, on behalf of the Committee on Communications and Information Policy and the Committee on U.S. Competitiveness, of the United States Activities Board, Institute of Electrical and Electronics Engineers, Inc., is an original plus five copies of their Comments in response to the Commission's Tentative Decision and Further Notice of Inquiry in the above referenced proceeding.

If there are any questions, please contact the IEEE Washington Office at the address and telephone number listed below.

Sincerely,

John M. Richardson

John M. Richardson
Chairman
Committee on Communications
and Information Policy

Bruno O. Weinschel

Bruno O. Weinschel
Chairman
Committee on U.S. Competitiveness

Attachment

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The Institute of Electrical and Electronics Engineers, Inc.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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OCT 20 1988

In the Matter of)
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Advanced Television Systems and Their)
Impact on the Existing Television)
Broadcast Service)
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Review of the Technical and)
Operational Requirements: Part 73-E,)
Television Broadcast Stations)
)
Reevaluation of the UHF Television)
Channel and Distance Separation)
Requirements of Part 73 of the)
Commission's Rules)

Federal Communications Commission
Office of the Secretary

MM Docket No. 87-268

COMMENTS OF THE
COMMITTEE ON COMMUNICATIONS AND INFORMATION POLICY
AND THE
COMMITTEE ON U.S. COMPETITIVENESS
OF THE
UNITED STATES ACTIVITIES BOARD
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

INTRODUCTION

1. The Committee on Communications and Information Policy (CCIP) and the Committee on U.S. Competitiveness (CUSC), both of the United States Activities Board of the Institute of Electrical and Electronics Engineers, Inc., are actively studying several of the issues pertaining to the introduction of High Definition Television (HDTV) in the United States.
2. A number of interrelated issues that must be addressed include: technology developments, benefits to the consumer, benefits to U.S. industry, the need for standardization, compatibility with existing receivers, and spectrum utilization. These are addressed briefly in the following pages.
3. The Interim Report of the Federal Communications Commission (FCC) Advisory Committee on Advanced Television Service, June 16, 1988, hereafter referred to as the FCC/AC report, describes progress on the FCC's efforts to come to grips with HDTV issues. More recently, the FCC issued a Tentative Decision and Further Notice of Inquiry, dated September 1, 1988, in which it took the position that a terrestrial broadcast standard that is compatible with the present National Television System Committee (NTSC) standard would be forthcoming and that the availability of spectrum for broadcast HDTV would have to come from within the existing VHF and UHF television spectrum allocations.

4. We commend the FCC and its Advisory Committee and recommend that the United States continue to play a proactive role in international decision-making for HDTV lest the United States find itself subjected to decisions made elsewhere in the world, which could work to its disadvantage. Currently, new video standards are being set by the Japanese-dominated video cassette recorder (VCR) industry. The United States can best influence this process with a timely stance by the FCC and American industry.

5. The FCC should continue to foster a proactive, participatory effort to lead to clear decisions and to strive for a timetable that will allow a timely, but thoroughly considered, introduction of HDTV in the United States.

TECHNOLOGY DEVELOPMENTS

6. It is generally acknowledged that the technology now exists to permit TV production and delivery for high quality video comparable to 35mm film and digital audio comparable to that offered by compact discs. The NTSC standard for TV has existed for nearly 50 years and has been significantly modified only once (to incorporate color). Since this standard was developed, major technology advances have occurred including solid state integrated circuitry, digital signal processing circuitry and software, video recording, satellites, and fiber optic cables.

7. The NTSC standard evolved with the premise of delivery via terrestrial VHF/UHF broadcast. In recent years, cable and satellite media have had a significant impact on the transmission of programs while VCRs and video disc technology have offered new means of delivery of program material to the consumer. Direct Broadcast Satellites (DBS) are already a reality in Japan and will soon be in Europe and it is expected that they will emerge in the United States in the future. Fiber optic cables are increasingly being installed in the distribution networks of local telecommunications companies. These developments point to an increasing diversity of choices and options in TV production, distribution, and delivery, which were not anticipated in the now huge infrastructure surrounding NTSC.

8. It is important to recognize that any consideration of HDTV must take a total systems approach to TV production, distribution, and delivery and not be limited merely to issues surrounding the TV receiver and spectrum allocation. Also, it is important to take a long-term view of technology, since once adopted, any new system can be expected to be in operation well into the next century.

BENEFITS OF HDTV TO THE CONSUMER

9. Potential benefits go beyond the technical aspects of better resolution, wider aspect ratio, and better sound. For example, the better resolution can not only improve existing pictures but can offer the program creator opportunities to display images that are not feasible on television today. Some argue that once consumers see the quality of HDTV they will demand it. Others

point out that consumer demand has yet to be demonstrated and, in any case, it will depend on the cost. If implementation of HDTV resulted in an increase in utility as perceived by the consumer, there would almost certainly be a demand for it. However, if the consumer is required to discard existing equipment in favor of sets costing much more, it is not yet clear to what extent and how rapidly a migration to the new system would occur. To the extent that consumer desire for maximum picture quality is demonstrated, a strong case can be made that if a new system is adopted, it should strive for the best picture, consistent with technical and economic factors, thus suggesting that "compromise" systems offering only moderate improvements will not be in the long-term interests of the consumer or the TV industry, particularly if very high-quality TV is offered in other parts of the world.

10. Additional controlled and quantifiable tests are urgently required in order to put the perceived benefits of HDTV in perspective. These test results are an essential element in establishing the standard for HDTV.

11. The FCC/AC report acknowledges this. Specifically, Planning Subcommittee/Working Party 6 (PS/WP-6) of that committee has proposed a test methodology for performing subjective evaluations of candidate systems.

BENEFITS TO U.S. INDUSTRY

12. It has been suggested that HDTV may present a unique opportunity for U.S. industry to reenter the TV manufacturing arena. Some contend that the United States is already heavily involved in a significant way. Comments to the FCC/AC report point out that more than 500,000 people in the United States are actively involved in the manufacture, distribution, sales, and service activities, and at least twenty companies make TV sets in the United States, although all but one (Zenith) are foreign-owned and most of the components assembled in the United States come from offshore.

13. The key questions regarding HDTV's potential impact on U.S. competitiveness are:

- ° Would a unique U.S. standard provide a competitive advantage to potential U.S. reentrants?
- ° Would an early standard for HDTV transmission place U.S. industry in a more competitive position?

14. Examples in other countries, such as Brazil and France, suggest that unique standards based on excluding competition rather than on quality are counter-productive to the interests of the consumer and offer little benefit to industry. Proponents of a quick adoption of a single standard argue that it offers the best opportunity for U.S. industry to achieve a competitive position. Opponents argue that HDTV technology is rapidly and continually evolving and this progress could be strangled by a premature standard. Also arguing against hasty adoption is the fact that the candidate systems have not been fully evaluated from the viewpoint of transmission impairments. Comments to the FCC/AC report point out that in any case the "advantages" of early adoption vis-a-vis competitiveness are illusionary--foreign manufacturers will quickly adapt to the technology and the underlying factors that make the United States non-competitive will not have been addressed.

15. The competitiveness of the U.S. television set manufacturing industry will not be materially aided by adopting a unique or an early U.S. standard. Therefore, U.S. competitiveness should not be a controlling factor in setting an HDTV standard, either in its makeup or timing of its adoption.

SINGLE SET OF STANDARDS

16. The objective is a single set of standards for terrestrial broadcast, display, and the interface between them. Each is discussed below.

17. The display standard is very important because it establishes the ultimate picture quality for the consumer. Therefore, its parameters should be defined to allow for the highest practical HDTV quality taking into account the tentative production standard and accommodating all the potential delivery media.

18. The interface standard should be consistent with the high-quality display and should also accommodate the various delivery media. For example, it could be based on individual signal components such as the Red-Green-Blue signals (RGB), broadband ISDN, etc.

19. The terrestrial broadcast standard should encompass transmission and receiver parameters which are consistent with the above interface and display standards.

20. The FCC Tentative Decision and Further Notice of Inquiry indicates that an NTSC-compatible standard will be forthcoming for terrestrial broadcast which will accommodate existing NTSC sets. This standard may utilize an additional 3MHz or 6MHz of bandwidth to provide improved quality.

21. This standard may not yield deliverable quality as high as can be provided by other media such as cable, satellites, fiber optics, and VCRs. Therefore, as indicated above, the standards for the HDTV display and interface should not be limited by the terrestrial broadcast parameters, but should be capable of delivering the highest available quality.

22. There is no urgency to set a standard for delivery by other media such as satellites and cable. The FCC appears unsure of its authority in this area and these media are expected to adapt rapidly when the display and interface standards are defined.

23. The FCC should, in a timely manner, produce a single set of standards for display, interface, and terrestrial broadcast. The display and interface standards should be capable of accommodating other media and be consistent with the highest deliverable HDTV quality.

COMPATIBILITY WITH EXISTING RECEIVERS

24. A fully compatible system allows reception of HDTV signals by an NTSC receiver without significant degradation in quality below present NTSC color transmission and an HDTV receiver would also be able to receive an NTSC signal without degrading it. The FCC Tentative Decision and Further Notice of Inquiry maintains compatibility with the NTSC systems and existing allocations. We support the tentative decision to make terrestrial broadcast HDTV compatible with

NTSC systems provided that such action has no impact on the high-quality display and interface standards mentioned above, which would be utilized by the non-broadcasters.

SPECTRUM UTILIZATION

25. Optimum HDTV will undoubtedly require more than the 6MHz per channel used by NTSC. But the additional spectrum needed to expand existing TV broadcast channels in this way is also needed by an expanding private and public mobile radio service. This contributes to the difficulty of the adoption of terrestrial broadcast HDTV which requires additional spectrum allocations. It must be noted that while it is possible to provide TV delivery by non-broadcast means, and in fact nearly 50% of United States homes are serviced by cable or satellite, it is not possible to serve mobile radio by such means. Some compromise in the number or spacing of broadcast channels is likely to be required in urban areas to accommodate the higher bandwidth required by each channel.

26. The standard adopted for terrestrial broadcasting should not be constrained by the current 6MHz broadcast channel bandwidth. The conduct of further tests and simulations can yield meaningful data to assist in making an informed decision regarding spectrum issues. Therefore, such tests should be carried out before adoption of a standard. In order that decisions not be delayed, some urgency should be given to the spectrum allocation questions.

SUMMARY OF RECOMMENDATIONS

1. The FCC should continue to foster a proactive, participatory effort to lead to clear decisions and to strive for a timetable that will allow a timely, but thoroughly considered, introduction of HDTV in the United States.
2. It is important to recognize that any consideration of HDTV must take a total systems approach to TV production, distribution, and delivery and not be limited merely to issues surrounding the TV receiver and spectrum allocation. Also, it is important to take a long-term view of technology, since once adopted, any new system can be expected to be in operation well into the next century.
3. Additional controlled and quantifiable tests are urgently required in order to put the perceived benefits of HDTV in perspective. These test results are an essential element in establishing the standard for HDTV.
4. The competitiveness of the U.S. television set manufacturing industry will not be materially aided by adopting a unique or an early U.S. standard. Therefore, U.S. competitiveness should not be a controlling factor in setting an HDTV standard, either in its makeup or timing of its adoption.
5. The FCC should, in a timely manner, produce a single set of standards for display, interface, and terrestrial broadcast. The display and interface standards should be capable of accommodating other delivery media and be consistent with the highest deliverable HDTV quality.

6. The standard adopted for terrestrial broadcasting should not be constrained by the current 6MHz broadcast channel bandwidth. The conduct of further tests and simulations can yield meaningful data to assist in making an informed decision regarding spectrum issues. Therefore, such tests should be carried out before adoption of a standard. In order that decisions not be delayed, some urgency should be given to the spectrum allocation questions.

Respectfully submitted,



John M. Richardson
Chairman
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and Information Policy



Bruno O. Weinschel
Chairman
Committee on U.S. Competitiveness

United States Activities Board
Institute of Electrical and Electronics Engineers, Inc.

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